THE AUSTRALIAN HERPETOLOGICAL SOCIETY JOURNAL

AUSTRALIAN HERPETOLOGICAL SOCIETY

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Meetings are held on the 3rd Thursday night of each month at 8 p.m. 1st Floor, Parramatta Town Hall.

Authors of articles contained in the journal are responsible for the opinions expressed and for the accuracy of the facts in their contributions.

COVER - Boyds Forest Dragon (Gonocephalus boydii)

H E R P E T O F A U N A

November, 1971 Vol. 3 No. 4

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VIPERA BERUS (LINNAEUS 1758)

EUROPEAN ADDER

BY

A.J. ZWINENBERG

PART 11

PREY AND FEEDING METHODS

Adders feed mainly on mice and - in areas where their numbers have not been decimated - play a useful part in maintaining the biological balance, being thus very useful to man.

Stomach contents have proven that the prey includes mice such as Microtus spp; Apodermus spp; and members of the family Soricidae. The mole (Talpa europaea) and the Smooth Snake (Coronella austriaca) also form part of its diet, as well as lizards, frogs and birds (caught on the ground). Hvass (1965) mentions a preference for ants, but this appears to be nonsense. The choice of food depends on the biotope wherein it lives. The prey is caught during the night.

Adders belong to the solenoglyptic snakes, i.e. they possess large hollow fangs in the upper jaw, which are folded back when not being used. This is the most specialised venom apparatus known in snakes. Apart from adders (Viperidae), pit-vipers (Crotalidae) also possess this specialised apparatus.

Adders always have two ¼" fangs ready for action, these being connected to the venom glands, while reserve fangs in various stages of development are present. These are necessary as fangs only last about 6 weeks. The elongated venom glands produce a secretion which contains heamotoxins. Even newly born adders possess such glands. A bite is usually not fatal for humans although it has unpleasant effects. Research into the few fatal bite cases (a.o. in U.K.) showed that the majority of victims were bitten on very hot days.

From the foregoing it is clear that adders are terestial, their body shape does not allow for rapid locomotion. The prey is found with the assistance of Jacobson's Organ, situated in

the roof of the mouth, which is a very sensitive organ whereby warm blooded animals are being detected by the smell of minute particles in the air.

The venom is administered with a rapid lunge, and the victim dies within minutes. This period depends on the size of the animal, larger animals taking longer to succumb. Small prey however is not killed by the use of venom but grabbed with the teeth and swallowed immediately.

REPRODUCTION

Adders mate in The Netherlands during April and May; in Northern-Europe however, where summers are very short, mating may take place no earlier than June or July, and then only every two years. The eggs require a long period for development. In Southern-Europe mating commences in March, and mating adders have been found there in December.

Early in the mating season males indulge in wrestling and try to establish a territory. These wrestling matches are usually between two adders although sometimes more than two specimens may do battle together. The fight reaches its peak in the so called 'dance' where two males push up head and forebody and wrap themselves around each other. By pushing and hitting one tries to push the other flat on the ground. It is noteworthy that not once have adders been seen to bite each other during the contest. Often a female is in attendance waiting for one of the rivals to retreat. Thereafter mating follows (usually toward dusk) whereby the male wraps himself around the female. The teeth are not used to steady him.

Adders are ovoviviparous, the young being born in a transparent skin which they break by strenuous wriggling. Completely developed young are found during August and September, they are then between 6 and 9 inches long and completely self-sufficient. However they seem to remain in the vicinity of the female for some time after birth.

The number of young born varies considerably. Recorded clutches vary from 2 to 22, the average appears to be between 7 to 14. Adders are full grown at 5 to 6 years of age, the

growth - rate per year being 3 to 4 inches. According to Frommhold (1969) males are sexually mature after 3 and females after 4 years. According to the same source their life-span lies between 5 to 8 years.

SYSTEMATIC CLASSIFICATION

Adders (Vipers) and Pit-Vipers are so similar that it took some time before it was decided to classify them as separate families. In the older systems therefore the family Viperidae is divided into the sub-species Viperinae and Crotalinae, whilst in the newer systems these are two separate families.

Due to the fact that the colours and markings of adders vary so greatly, dozens of different sub-species were recorded in the past. This led to the reptile receiving many different names, the list of synonyms still records more than 50 names. Currently only four sub-species are accepted as set out in the table.

REASONS FOR REDUCED NUMBERS

As mentioned before the species is becoming much rarer, especially locally. v.Wijngaarden (1959) gives a number of reasons for this, the main ones being the development of its habitat into farmland, the use of moors as exercise areas for the military, the increasing influx of tourists and increased traffic. However, one of the main reasons in my opinion is the eradication of the species by humans. Every adder or similar reptile is being killed, especially by forestry-workers. Years ago there was even a bounty on them.

The adder also has to contend with natural enemies, such as the hedge-hog (Erinaceus europaeus), which contrary to popular belief is not immune to the adder's venom. Other predators are wild pigs, stoats, native rats, owls, buzzards, storks, herons, cranes, raven and black crows, whilst juveniles are occasionally taken by the smooth snake (Coronella austriaca).

TABLE (Frommhold 1969)

VIPERA BERUS.

Sub-Species	Type Locality
1. Vipera berus berus (Linnaeus, 1758)	Upsala, Sweden.
2. Vipera berus bosniensis (Boettger, 1889)	Trebinje, Yugoslavia.
3. Vipera berus seoanei (Lataste, 1879)	Cabanas, Province of La Coruna, North-West Spain.
4. Vipera berus sachalinensis (Carevsky, 1915)	Vladisvostok, Siberia.

Distribution	Details
1. Northern-Europe Eastern-Europe Siberia to Amur R.	Length between 24 to 27 inches, base colour gray or brown. Head not very clearly distinct from body.
2. Yugoslavia, Southern Hungary, Bulgaria, Northern-Albania.	Zig-Zag marking sharply angled. Both sexes same colour. Often more than 30 inches long.
3. Northern Spain and Portugal, Pyrenees.	Often two white long itudinal stripes on each side of back.
4. Sachalin Island, mountainous areas around Amur R. East Asia.	Paler markings, maximum length around 2 feet.

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Van Wijngaarden A. (1959) : 'Over de verspreiding en oecologie van der adder in Nederland', De Levende Natuur, jrg. 62, blz. 254 - 261.

Ijsseling/Scheygrond A. (1962) : 'Wat is dat voor een dier', Thieme - Zutphen, blz. 85.

ADDITIONS TO THE LIBRARY

Frogs of Eastern N.S.W.	By J. Moore. A Bulletin of the American Museum of Natural History.
Medical Journal of Australia. 482 October 17, 1931.	Treatment of Snake Bite in Australia by Kellaway.
Index of Australian Herpetological Literature to 1970.	
Reptilia.	A complete set of the first magazine of the Australian Herpetological Society. Five issues 1954 -- donated by H. Hirschhorn.

Members are reminded that books are available from the Library for a period of one month. If the book is to be posted the member must reimburse the cost of postage when returning the book.

A revised list of all books, periodicals, pamphlets etc. held in the Library is being prepared and will be sent to all members shortly.

OTHER ITEMS AVAILABLE TO MEMBERS

Lapel Badges	Enamel, green background, gold lettering, Black snake.	$1.00
Heating Cable	20 Foot lengths.	$1.00
Thermostats	Adjustable.	$2.00
Dri-Die	A must for mite, 75¢ per 3 oz. bag.	
Mouse Cages	The Society can have mouse cages specially made up with a plastic tray, wire top, food hopper and water feeder. The more people interested in purchasing these the cheaper the price. Contact Noel Leech for more information.	
Books	Members are assured of the best bargains in town when looking for equipment or books if they go to the Nature & Field Hobby Centre at 24 Darlington Street, CROWS NEST.	

Preliminary Notes on Some Short-Necked Tortoises from Eastern New South Wales.

By John Cann.

Originally published in the Victorian Naturalist Volume 86 Number 7.

Relatively little information has been published on short-necked tortoises in the genus Emydura found in N.S.W. east of the Great Dividing Range. Worrell (1963) specifies no species for this area, while Goode (1967) states that only the species Emydura kreffti is found in this area, and then only as far south as Kempsey (latitude 31° 5' south).

The population described would appear to be geographically isolated from short-necked tortoises of Emydura described from eastern coastal Queensland and from those of the Murray-Darling-Macquarie Rivers west of the Great Divide. At present, the extent of the population described would seem to be bounded in the west by the Great Dividing Range, and in the north by the Ebor River (latitude 30° 25' S) and in the south it extends to the Shoalhaven River (approximately 35° S).

Taxonomically, this tortoise has yet to be described and its status and phylogeny determined, and this paper is confined to observations on some aspects of its behaviour and on the comparison of its eggs and hatchlings with those of some other chelid tortoises.

Most of the observations of these tortoises have been made in the Macleay River, N.S.W. where they have been studied both by skindiving and by other methods. To date, more than 300 tortoises have been marked and catalogued and observations are continuing.

THERMOREGULATION.

On 23rd May, 1968 and on 7th July, 1968 water temperatures were recorded at 7°C and 5°C respectively. On both occasions large numbers of these tortoises were observed to be active, which would appear to indicate that they do not hibernate at these temperatures.

"CONJUGAL FIDELITY"

Early observations in 1968 indicated that often male and female tortoises swam together and subsequent marking of such pairs showed that with one pair marked, they were still swimming together two months after marking. At times, up to eight or ten "pairs" of tortoises have been seen swimming together.

With this population, there appears to be clear sexual dimorphism in the carapace of males and females which seem to show consistent differences.

As pairing has been noted at different times of the year, it would appear that this phenomenon is not confined to the possible courtship period and further observations will be made on this aspect of their behaviour.

The size of mature specimens of this group is conspicuously smaller than that known for Emydura macquari with a carapace length of 6.0 - 6.5 inches (153 - 165 mm) appearing to be the largest attained by most adults.

NESTING & INCUBATION

To date eggs of this new group have been found in only two nests. A typical egg had a length of 1.44 ins (36.51 mm) and a cross section diameter of 0.7 ins (17.85 mm). The young from one nest hatched on 2nd February '69 and had a carapace length and breadth respectively of 1.11 & 0.905 ins (28.17 & 23 mm). These specimens have been preserved and are now in the collection of the Australian Museum, Sydney.

Differences have been observed between eggs and hatchlings of the eastern N.S.W. Emydura sp. and those of E. macquari. However, Goode (personal communication, 1969) states that even within a single species, a wide range of egg shapes and dimensions may be notes, and also between hatchling sizes from a single clutch of eggs.

CONCLUSIONS.

Much further work needs to be devoted to this geographically isolated group of emydurid tortoises from eastern N.S.W. and this is now in progress. Work on their taxonomy and on other aspects will continue and will be published when results are available. At this time, it would appear that the group has been isolated for some considerable period, and while it is not known whether or not it is reproductively isolated from adjoining species of Emydura, its small size and the noted differences in egg shape and dimensions, and in hatchlings, would seem to be significant.

ACKNOWLEDGEMENTS.

I am grateful to Mr. John Goode for his advice regarding particular aspects of this investigation and for his suggestions on the editing of this paper.

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Recently we have had several requests to stage exhibitions for various organisations, usually in the form of a talk and display of reptiles. This is of course an excellent way of publicising the Society, creating a more reasonable attitude towards reptiles by the public, and possibly attracting new members.

Unfortunately, the task of giving the talk, helping at the exhibition, and providing specimens for display, has been undertaken by the same five or six members.

More volunteers are needed urgently if we are to continue with such exhibitions. No matter if you cannot speak in public, at least four people are required to successfully stage one of these functions and we definitely need more offers of specimens for display.

With a roster of twenty, each person would only be called on once or at the most twice in twelve months, so think about this and if you are willing to help in any capacity, please contact Jack Verhagen.

THE ORIGIN OF REPTILES

BY

DOUG ADAMS

PART 11

The first forms to attain a land type of egg are known as cotylosaurs, or stem-reptiles. They began to emerge in the Carboniferous, the period of amphibian dominence, and flourished during the following Permian. Early parts of this last mentioned period saw some profound changes in habitat, not least of which was the changing of some climates to desert. A typical stem-reptile seymouria, might be roughly described as looking like an imaginary cross between a blue-tongue lizard and a goanna, though of course they were structurally more primitive than any lizard. They were about three feet in length.

During the Permian the stem-reptiles branched out into a number of varied lines. But their fate has been that of the founders of any great line of evolutionary development; from them arose many more progressive groups, and they themselves soon vanished from the scene as the true Age of Reptiles began.

This vast period of reptilian dominence commenced after the Permian and spanned 125 million years (Triassic Jurassic, Cretaceous); coming to an end 75 million years ago. The reptiles involved were extremely varied in shape and size. Today there are but four orders of living reptiles. More than twice this number had become extinct by the end of their period of dominence.

The Permian saw numerous evolutionary lines spring forth from the stem-reptiles. Of course most were land-dwelling forms, but here it is of interest to note something ironical. After having established themselves fully on land, some of their numbers returned to an aquatic environment. Some returned to the water because there was a plentiful supply of fish which could be utilized as food. The reptiles that made this return did so, not as reconstructed fish, but as modified reptiles.

There were, living early in reptilian history, the nothosaurs, small creatures rarely more than three or four feet in length and undoubtedly amphibious in habit. They were slender animals with relatively long tails and necks, and their limbs could apparently function as both fins and feet. Nothosaurs are known

only from the Triassic, but before they died away they gave rise to far more successful and widespread group - the plesiosaurs. These forms lived on until the end of the Age of Reptiles. Some of the later plesiosaurs were fifty feet in length.

These fish-eating ocean going creatures had strong, large paddle-like limbs, and usually a long neck coupled with a small sharp-toothed skull. However, some forms were short necked, and had huge ten foot skulls.

Other marine reptiles were the ichthyosaurs. These creatures became so modified by a life in the sea that later forms were quite fish-like in appearance. They were about ten feet long and their pointed snouts were armed with sharp teeth. Their streamlined bodies had two pairs of paddle-like ventral limbs and a fleshy dorsal fin. The fish-like tail was the chief agent of propulsion, the fins being used mainly for steering. The ichthyosaurs must have been fast and powerful swimmers in the open ocean. In appearance and habits they remind one of the dolphins, who occupy the same ecological niche today. No doubt they evolved from the stem-reptiles by processes akin to those by which dolphins came from ancestral mammals. The ichthyosaurs disappeared at the same time as the plesiosaurs.

The most familiar of aquatic reptiles are the turtles, a common group amongst living creatures, and one that has undergone very little change since their first appearance early in the Age of Reptiles, nearly 200 million years ago. A truly amazing success story. The protective shell seems to be the basis of the turtles' survival.

The line of descent of turtles from stem-reptiles is not well illustrated by fossils. However, there is a specimen from as far back as the Permian which shows broadly expanded ribs, thus suggesting the beginning of the turtle shell.

The earliest turtles were probably fresh-water amphibious creatures. A small number became marine forms as the reptilian eras progressed. Today the percentage of sea-going forms is still small. The largest of the turtles was an extinct form a dozen feet in length.

The earliest true turtles had not the power of drawing in their necks or limbs. Some had teeth; these being lost in later forms which developed beak-like jaws.

Purely terrestrial tortoises did not appear until the close of the Age of Reptiles. Considerable time could be spent discussing the various living forms. However, we will now return to the cotylosaurs or stem-reptiles.

We will now consider some terrestrial off-shoots. One of the earliest groups are the pelycosaurs, who lived before the Age of Reptiles came into full swing. These creatures were a rather varied group, being represented by both carnivorous and herbivorous forms. They were thickset creatures with fairly long tails and ranged in size up to ten feet. Their most striking feature was the development along the back of greatly elongated spines which were covered by skin and formed a sail-like structure up to three feet high. Although not present in all members of this group, this fin was present in a number of quite different forms.

Another very early branch from the stem-reptiles were the Rhynchocephalians. Amazingly, this ancient order is represented by a living species. On a few small islands off the coast of New Zealand lives the tuatara (Sphenodon). This animal, which looks superficially like a lizard, is a living fossil. Bones of the skull are similar to those of ancient ruling reptiles, and fossilised remains of Rhynchocephalians quite similar to the tuatara indicate that this order is a link between the stem-reptile and the dinosaurs.

The reason for the tuatara's survival is the isolation of its habitat from the predators which destroyed this group in other parts of the world. New Zealand may have been separated from other land bodies since the Age of the Reptiles. Bats are the only mammals to have reached New Zealand before man arrived. There are no snakes (renowned lizard eaters) in New Zealand.

Of extreme importance to us is the branch of the stem-reptiles known as thecodonts, which were a varied and widespread group that flourished during the first period in the Age of Reptiles. These reptiles were the foundation stock of the dinosaurs, and for this reason I shall be referring to the thecodonts as "stem-dinosaurs" for the rest of our story. I would impress upon the reader that we have left the "stem-reptiles" and are now concerning ourselves with "stem-dinosaurs".

These progenitors of the dinosaurs were comparitively small creatures - the average length was about a yard and this

included the long tail. In appearance these scaly creatures resembled a fairly large modern lizard; though structural differences were great. These stem-dinosaurs (e.g. Ornithosuchus) walked on all fours when progressing slowly, but when speed was necessary, the smaller front limbs were lifted from the ground and the animal ran on its larger back limbs, the weight of the tilted body being balanced by the long tail. Today a similar means of progression is used by some goannas (Varanidae) and dragons (Agamidae) when a burst of speed is required to escape an enemy; though this can only be done over a short distance.

We shall now deal with the types of animals evolving from the stem-dinosaurs. Incidentally, mammals, did not come from the stem-dinosaurs - though of course they did evolve from reptiles. Their evolution arises from other lines leading from the "stem-reptiles". Birds, however, did evolve from the stem-dinosaurs, and it is not out of place to mention them briefly.

Birds, seem to us to be a separate class of vertebrates, and seem as unlike reptiles as any sort of animal could be. But, apart from their power of flight, and feathers connected with it, they are structurally similar to reptiles. Feathers, their most distinctive feature, are, in reality, only modified scales. Next time you see a fowl or other bird, take a close look at the legs -are they not covered with reptilian scales? - are not reptilian toe-nails present? Birds have a tail which holds the tail feathers, though of course it is reduced to a short stub. A search of the wing will reveal a claw which still carries a nail. Early birds had teeth, and all birds still lay eggs just like their reptilian ancestors.

Besides feathers, the next biggest difference between reptiles and birds is that the latter are warm blooded, whereas reptiles are cold-blooded. This warm bloodedness does not indicate a relationship between birds and mammals. As I indicated earlier, birds and mammals sprang from two separate evolutionary lines, each line evolving warm blood independently of the other.

Returning to the stem-dinosaurs, we will now deal with the most important group in the Age of Reptiles, this group being the dinosaurs themselves.

Dinosaurs have furnished us with one of the most interesting sagas in vertebrate evolution. They increased in numbers

and size, and ruled the Earth without rivals for a hundred million years, and then disappeared forever.

We customarily think of dinosaurs as a group of gigantic reptiles. But it is a fact that some dinosaurs were quite small. Some dinosaurs were the largest animals to ever walk the earth, but others were as small as a barnyard fowl.

I have already explained how the stem-dinosaurs ran only on their hind limbs when a burst of speed was required. This mode of progression must have been extremely favourable, for the dinosaurs developed this bipedal locomotion - their bodies being suitably adapted in the process. Thus we have a definite enlarging of the hind limbs while the fore-limbs remain small. The trend was towards an upright stance, the body being balanced by the thick tail which together with the hind limbs made a tripod to support the erect body. This specilization was carried to an extreme in the Tyrannosaurus whose hind limbs were thick and strong but the fore-limbs ridiculously small. These vestage fore-limbs must have been next to useless to this animal (they couldn't reach the mouth); progression on four limbs would have been impossible. Clearly, Tyrannosaurus must have been exclusively bipedal. This great flesh-eater was the largest carnivore to walk the Earth. He stood some 19 feet high and had a massive skull more than 4 feet in length armed with numerous sabre-like teeth.

As the Age of Reptiles progressed some of the large dinosaurs changed over to a plant diet, and in correlation with their increasing bulk and lessened need for speed as plant-eaters, slumped back to a four footed method of walking. From such beginnings came the great amphibious dinosaurs, the Sauropods, the largest four-footed creatures that ever existed. Diplodocus, at eighty-seven and a half feet and a weight of twenty-five to thirty-five tons, holds the length record, but was not the heaviest. Diplodocus had a massively built body, supported on four elephant-like legs. It is interesting to note that although this animal walked on four legs, the hind limbs were longer. This is a legacy of the trend towards a bipedal method of walking in the early dinosaurs. Diplodocus had a long tail and neck. The head was small with the eyes high up on the sides and the nostrils at the very top of the skull. This animal was amphibious in habits and could breathe and see with only the top of the head exposed above water. The jaws were short and weak, the teeth feeble and few in number. It seems incredible that such a feeding apparatus could have gathered enough food to supply the huge body.

TO BE CONTINUED.

Do you like the new look "Herpetofauna"? The committee hopes so, as they have spent some time endeavouring to improve both the appearance and the content of the Journal. To ensure success however, we are dependent on the support of every member for contributions.

Five page articles or single paragraphs, keep them coming in. Let us decide whether or not they will be of interest to other readers. Items do not have to be of great scientific importance - an interesting observation, something read, an amusing incident, how you have kept a reptile successfully in captivity, all these make good reading and above all it is sharing knowledge gained.

Don't forget, one of the aims of the Society is to collect and exchange information on all aspects of Australian reptiles and amphibians.

There is surely no point in learning something by, say, personal observation if you are not prepared to pass that information on to others. Such knowledge is futile. Fortunately for mankind such pettiness is rare, otherwise we would still be living in the stone age.

We would ask <u>all</u> members to make the effort and contribute to the Journal. Other readers could benefit.

Discussion on the Bearded Dragon - Amphibolurus, Barbatus, Barbatus.

Our guest for the evening was Judy Caughley. Judy has been studying Bearded Dragons in their natural habitat and has set out some of her observations in the article below.

Bearded Dragons have been successfully kept in captivity for some years, although breeding in captivity has not been widely reported. Queensland specimens are said to adapt to captivity better than those from N.S.W. One member reported that a specimen collected at Mildura, was observed taking food out of the mouth of a blue tongue.

Bearded Dragons from the Tamworth area sometimes have white patches, which could be due to a strange gene or it could be just dried skin. A closer examination is needed here.

Specimens from Bathurst are yellowy whilst coastal specimens are mainly darker. Dragons from the West Wyalong area often have dark orange colouring around the eyes, and specimens from Mildura are yellowy orange with orange around the eyes; the inside of the mouth being a dull yellow. Around Coffs Harbour the colouring is steel-blue and this colouring is also reported for Queensland specimens.

Colour changes were observed, being due to variations in temperature i.e. an animal changes colour moving from cold grass onto warm concrete. Stress colouration was also noted, the legs turning yellow and dark stripes appearing on the animal's back.

One instance of a dragon biting another dragon was mentioned but on the whole dragons appear to be fairly placid in captivity. Beardeds are apparently quite content to sit out in the rain and a specimen at Macquarie Fields was found to be hibernating outside.

Progress, in the form of bush clearing for farms and timber-milling, seems to agree with them and they are often found in timberyards. One specimen observed in a timberyard appeared to remain in one position for 4 days.

Natural enemies include Goannas, Magpies, Kookaburras and Pythons.

Most members referred to 'Common' and the 'Small' Bearded

Dragons. It is interesting to read Judy's comments on the existence of three forms.

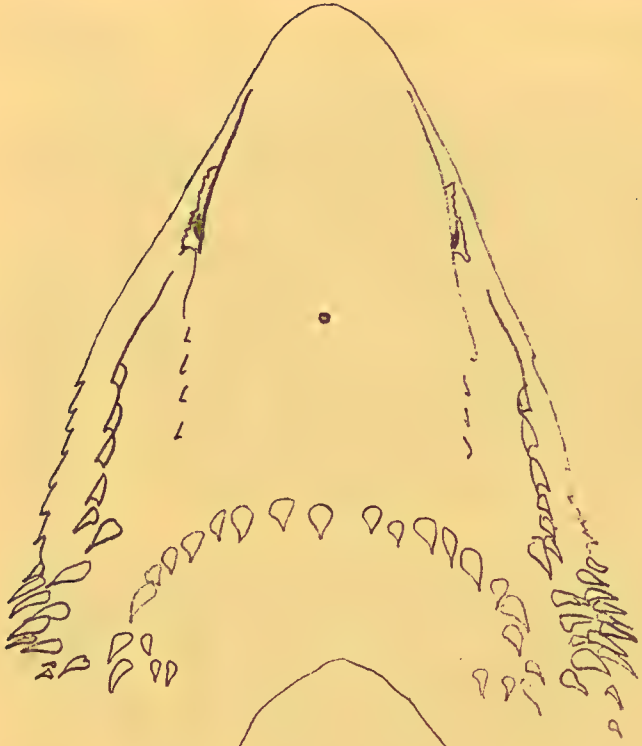
I have been studying two forms of the common bearded dragon (Amphibolurus barbatus barbatus) in the area between Cobar and Tullamore in the central west of N.S.W. The two forms I call the coastal and the inland. The coastal is the "common" bearded dragon and extends from the coast of eastern Australia inland to areas with approximately 15" of rainfall annually i.e. Gunnamulla, Nyngan, Condobolin, Hay, etc. The inland form has not formally be described although it is quite distinct from the common. It extends inland from 15" rainfall areas to the centre. This lizard is what many of you are calling the small bearded dragon and which Worrell figures (opposite p.48 in "Reptiles of Australia) as A.b. minor. The small bearded dragon is actually very different. It is much smaller, very slender and has a very long tail. It extends from Alice Springs across into West Australia where it is very common particularly in the south. Therefore the three forms, the common, the inland, and the small, "replace" each other as we go from east to west across Australia. The best way to distinguish the inland form from the others is by the spines on the back of the head (see diagram), the smaller beard compared with the coastal form and the shorter legs. It grows to the same size as the coastal, and hence to twice the size of the small.

As I said above, I have been comparing the ecology of the coastal and the inland. The breeding season of both forms is approximately four months in the area I was working. The first eggs are laid early in September, and the last in late December. Some females lay as many as three clutches of eggs, although young females only lay one clutch. The number of eggs laid in a clutch depends on the size of the female, and a large female may lay 30 eggs at a time. The eggs are laid at the end of a burrow about 1 foot long and about 8 inches below the surface of the ground. The length of incubation in the field is about 4 months so the first hatchlings are found about the end of December and newly-hatched lizards are caught up to early April at least. They grow very fast, at a rate of about 1 inch every 7 weeks, until they go into hibernation in about mid-May. They reach sexual maturity at about half adult size so that some of the early hatchlings (i.e. those which hatch in January) start breeding before they are one year old. However, most start breeding at 18 months of age.

The adult males are generally territorial during the breeding season. A territorial male perches conspicuously on a log or fence post; his beard and part of his venter at least will be black (unless the day is very hot) and he will display by head bobbing frequently - about once every 2 minutes. Females are attracted to displaying males for breeding. Other males, particularly the young ones, are not territorial. These are harder to find since they avoid elevated positions and are chased off these by territorial males if they do. Two territorial males are sometimes found fighting in the field. They circle each other and if they are common bearded dragons, vigorously slap one another with their tail. If they are inland males they try to bite the others tail.

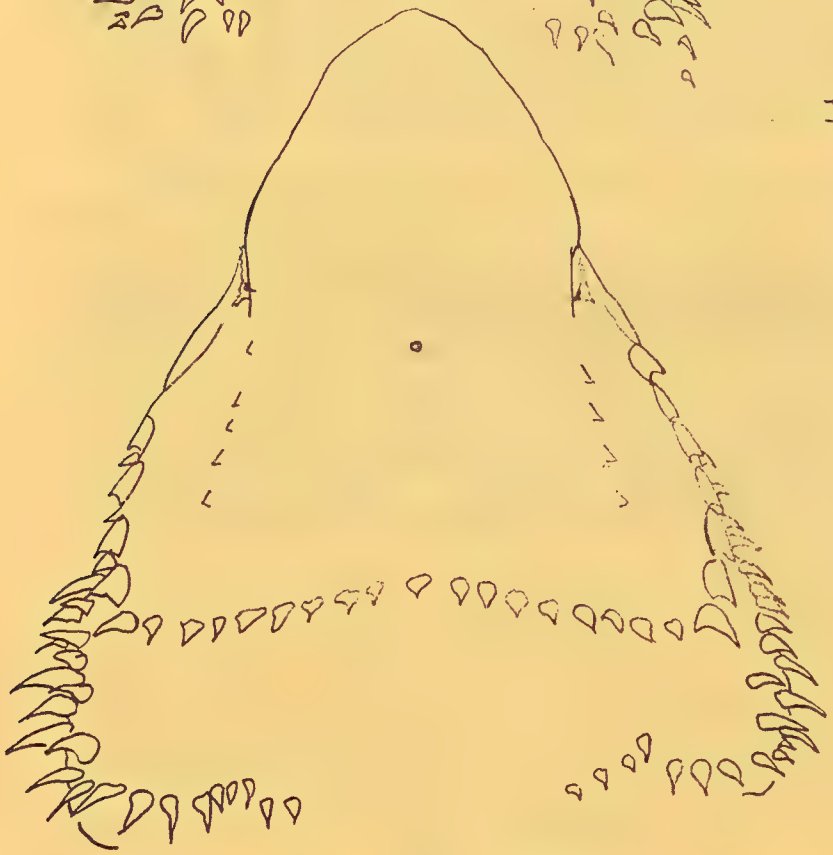
Both forms eat about 50% plants and 50% insects in the field. Plant food includes several different species of flowers such as blue bells, burr daisies and other composites (like dandelions), and the leaves of medic, wild mint, etc. The most important insects in terms of bulk are grasshoppers, but a wide range of types are eaten. The inland form also eats large numbers of ground termites (up to 2,500 in one lizard).

The lizards regulate their body temperature to about 95^{o} F. They start basking in the morning when their body temperatures is around 70^{o} F and warm up very rapidly (almost 1^{o} F per minute). They usually start becoming active and feeding at about 86^{o} F but continue to bask at intervals until their temperatures is up to 95^{o} F. Then they control the rate of heating by facing the sun, by blanching, or by sitting in the shade. If their body temperature gets above 98^{o} F they start to pant although this doesn't include rapid breathing like in a dog - rather they cool themselves by evaporation from the lining of the mouth. They are seldom found when the air temperature in the shade exceeds 98^{o} F.



Common bearded dragon

Amphibolurus b. barbatus



Inland bearded dragon

SNAKES AND LADDERS

Jack Verhagen recently came across four Green Tree snakes together in a cavity in honeycomb rock at Mt. White. Lengths ranged from 2 feet to 4 feet.

A new member Neil Sonnemann of Murmungee, Victoria is interested in corresponding with other members to exchange information and reptiles. His interests and address are listed on page 12.

While in Queensland, Gerry Swan had help from an unexpected source to secure an elusive lace monitor which had taken to the trees. While he was debating whether it was worth while going up after the monitor, a young kookaburra flew straight for the reptile and knocked it out of the tree. Examination showed no apparent injury from the attack, however, it was blind in one eye from a previous injury.

A Ridge Tail monitor of Geoff Mannings suddenly developed what appeared to be some type of brain damage, rolling around the cage in a most peculiar manner. Death followed after about a fortnight and the autopsy revealed a piece of wood about 5/16 of an inch long and 5/32 of an inch in diameter in the chest cavity. This would be equivalent to a person having a piece of timber 2 x 2 x 6 inches in the chest. The contortions were obviously to relieve pressure, with death being due to haemorrhage or infection.

* * * *

The silly season has started again. The newspapers lately have featured a greater than usual number of articles on snakes including the Black Snake, Taipan, Rough Scaled Snake, Death Adder and Sea Snakes. No doubt over the next few months we will have a surfeit of reports on snakes murdered with egg-beaters, pinking shears, rolling pins, hedge clippers, sewing machines etc.

Talking of newspaper articles - a report appeared recently in one well known magazine regarding the sport of lizard racing at the Cunnamulla-Eulo Festival of Opals which is held each August. The lizards race in a 40 foot circle starting at the centre, the winner being the first one to reach the perimeter. It is all taken very seriously with different races for different lizards and special training programs. Apparently this year specially trained lizards from Lightning Ridge also participated. Will this be a treat to Rugby League or Australian Rules?

The committee is considering the possibility of a Field Trip incorporating a trip up the Hawkesbury River by boat. This would be for a full day, the cost being $2.65 per person. At this stage it is necessary to find out how many are interested before making final arrangements. Those who wish to participate in this Field Trip should contact Gerry Swan.

THE AUSTRALIAN HERPETOLOGICAL SOCIETY

This Society was formed to enable people interested in reptiles and herpetology to meet regularly together.

The aims of the Society are:-

(1) To collect and exchange information on all aspects of Australian reptiles and amphibians.

(2) To encourage the study of reptiles and amphibians - both in their natural state and in captivity.

(3) To promote a sane and reasonable attitude to reptiles and amphibians among the general public.

(4) To organise field work in all parts of Australia and to render all possible assistance to members on collecting trips away from their home territory.